

REMARKS/ARGUMENTS

Favorable consideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-27 are pending in the application, with Claims 1-2, 5-6, 8, 11-17, 19, 22-24, and 26-27 amended by the present amendment.

In the outstanding Office Action, the drawings were objected to; Claims 1, 13, 26, and 27 were objected to; Claims 2 and 15 were rejected under 35 U.S.C. § 112, second paragraph; Claims 1, 6, 7, 9, 10, and 13 were rejected under 35 U.S.C. § 102(b) as being anticipated by Shigematsu et al. (U.S. Patent No. 5,694,239; hereinafter Shigematsu); Claims 1, 6, 9, 12, 24-26 were rejected under 35 U.S.C. § 102(b) as being anticipated by Watanabe (U.S. Patent No. 5,798,853); Claims 2-5, 8, 11, and 16-18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Shigematsu; Claims 14 and 15 were rejected under 35 U.S.C. § 103(a) as being obvious over Feng et al. (U.S. Patent No. 5,982,963; hereinafter Feng); and Claims 19-23 and 27 were rejected under 35 U.S.C. § 103(a) as being obvious over Watanabe.

Claims 1-2, 5-6, 8, 11-17, 19, 22-24, and 26-27 are amended to comply with MPEP § 608.01(m). Thus, Applicants submit the objection to Claims 1, 13, 26, and 27 has been overcome. No new matter is added.

Applicants traverse the rejection of Claim 2 under 35 U.S.C. § 112, second paragraph, noting that the claim recites “a plurality of optical fibers *having different nonlinear coefficients*; and a plurality of optical fibers *having different dispersion characteristics*.” Because two types of plural optical fibers are consistently recited in Claim 2, and all claims depending therefrom, with either *different nonlinear coefficients* or *different dispersion characteristics*, Applicants submit the same element is not included twice and the claims are not indefinite.

Applicants have amended Claim 15 as requested by the Examiner and, thus, submit the rejection of Claim 15 under 35 U.S.C. § 112, second paragraph, has been overcome.

Independent claim 1 is amended to recite, *inter alia*, that “the non-linear optical element, the dispersive optical element, and the wavelength selecting optical element are directly connected to one another according to one of a plurality of predetermined arrangements.” Claim 1 is further amended to recite that the dispersive optical element is separate from said nonlinear optical element. Applicants’ independent Claims 13, 14, 16, 19, 24, 26, and 27 are similarly amended. Support for these amendments is found in Applicants’ originally filed specification.¹ No new matter is added.

Briefly recapitulating, amended Claim 1 is directed to an optical pulse waveform converter, comprising: a) an optical pulse input port configured to receive an input optical pulse; b) a nonlinear optical element configured to broaden a wavelength content of an optical pulse routed through said nonlinear optical element; c) a dispersive optical element *separate from said nonlinear optical element* and configured to modify a temporal profile of an optical pulse routed through said dispersive optical element; d) a wavelength selecting optical element configured to pass selected wavelength components of an optical pulse routed through said wavelength selecting optical element; and e) an optical pulse output port configured to output an optical pulse comprising different optical characteristics than said input optical pulse. The non-linear optical element, the dispersive optical element, and the wavelength selecting optical element connect the optical pulse input port to the optical pulse output port. The non-linear optical element, the dispersive optical element, and the wavelength selecting optical element are *directly connected to one another* according to one of a plurality of predetermined arrangements. The claimed invention allows for simultaneous

¹ Specification, paragraph [0045]; Fig. 1.

control and manipulation of both pulse width and/or shape and the wavelength range of an optical signal.²

Shigematsu discloses a single mode fiber (SMF) 100 having an input port 101 and an output port 102. The SMF 100 is connected to an EDFA 500 which is connected to an optical filter 600.³ However, Shigematsu fails to disclose or suggest either a) a dispersive optical element *separate from said nonlinear optical element* or b) a non-linear optical element, a dispersive optical element, and a wavelength selecting optical element *directly connected to one another* according to one of a plurality of predetermined arrangements as recited in Applicants' amended independent Claim 1.

Watanabe discloses an optical amplifier 91 connected to an optical filter 92 having an Er-doped fiber and connected to a polarized light controller 93 which is connected to an optical coupler 94 connected to a dispersion shift fiber 96 connected to a second optical filter 97 connected to a second optical amplifier 98 connected to a SMF 84.⁴ However, Watanabe, like Shigematsu, fails to disclose a non-linear optical element, a dispersive optical element, and a wavelength selecting optical element *directly connected to one another* according to one of a plurality of predetermined arrangements as recited in Applicants' amended independent Claim 1.

Applicants have also considered the Feng reference and submit Feng does not cure the deficiencies of Shigematsu and Watanabe. As none of the cited prior art, individually or in combination, disclose or suggest all the elements of independent Claim 1, Applicants submit the inventions defined by Claim 1, and all claims depending therefrom, are not anticipated and are not rendered obvious by the asserted prior art for at least the reasons stated above.⁵

² Specification, paragraph [0006] and [0044]

³ Shigematsu, Figure 2.

⁴ Watanabe, Figure 12.

⁵ MPEP § 2142 "...the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of

For similar reasons Applicants submit the cited references, individually and in combination, also fail to disclose similar features recited in Applicants' amended independent Claims 13, 14, 16, 19, 24, 26, and 27.

Accordingly, in view of the present amendment and in light of the previous discussion, Applicants respectfully submit that the present application is in condition for allowance and respectfully request an early and favorable action to that effect.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Bradley D. Lytle
Attorney of Record
Registration No. 40,073
Michael Monaco
Registration No. 52,041

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413-2220
(OSMMN 08/03)

BDL/MEM/kkn

I:\ATTY\MM\AMENDMENT\236123\245739US-AM.DOC

success must both be found in the prior art, and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)."